

## CLAIMS

I claim:

1 1. A method for executing an operation upon a linked data  
2 structure having at least one element, the method comprising the  
3 steps of:

- 4 (a) performing a first set of operation tasks in a first  
5 phase, the first set of operation tasks operable to  
6 effect a first set of element state transitions;  
7 (b) developing a second set of operation tasks, the second  
8 set of operation tasks operable to effect a second set  
9 of element state transitions, the second set of  
10 element state transitions being distinct from the  
11 first set of element state transitions; and  
12 (c) performing the second set of operation tasks in a  
13 second phase.

1 2. The method of claim 1 wherein the first set of operation  
2 tasks includes navigating existing data structure links.

1 3. The method of claim 1 wherein the step of developing a  
2 second set of operation tasks further comprises developing  
3 pointers to the data structure, the pointers being used in the  
4 step of performing the second set of operation tasks in a second  
5 phase.

1 4. The method of claim 1 wherein operation tasks of the second  
2 set of operation tasks are performed atomically.

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1 8. The method of claim 1 wherein the first set of element  
2 state transitions further comprises:  
3 (a) a valid state to a pending delete state transition;  
4 (b) a pre-associated state to a pending insert state  
5 transition; and  
6 (c) a pending insert state to a hidden state transition.

1 9. The method of claim 1 wherein the second set of element  
2 state transitions further comprises:  
3 (a) a pending insert state to a valid state transition;  
4 (b) a pending delete state to an invalid state transition;  
5 (c) a hidden state to an invalid state transition;  
6 (d) a pending delete state to a valid state transition;  
7 (e) a hidden state to a pending insert state transition;  
8 and  
9 (f) a pending insert state to an invalid state transition.